

IN THE CLAIMS:

1 1-19. (CANCELLED)

1 20. (PREVIOUSLY PRESENTED) A computer readable medium containing executable
2 program instructions for use by an intermediate network device having a plurality of
3 ports for receiving and forwarding network messages, the executable program instruc-
4 tions comprising program instructions for:

5 configuring one or more ports as access ports, wherein an access port is a
6 port that does not provide connectivity to switches or bridges coupled to other
7 portions of a computer network, but instead connects to a Local Area Network
8 (LAN), a server or an end station;

9 configuring one or more access ports as rapid forwarding ports;

10 identifying all ports that have been configured as access ports with rapid forward-
11 ing; and

12 upon initialization of the device, placing each identified access port with rapid
13 forwarding directly to a forwarding spanning tree port state, without transitioning such
14 identified ports between any intermediary spanning tree port states, so that network mes-
15 sages may be received and forwarded by such identified ports immediately.

1 21. (CURRENTLY AMENDED) The computer readable medium of claim 20 wherein
2 the executable program instructions comprising further comprise program instructions
3 for:

4 monitoring each of the one or more access ports configured with rapid forwarding
5 for receipt of a configuration bridge protocol data unit (BPDU) message; and

6 in response to receiving a BPDU message at one of the access ports configured
7 with rapid forwarding, placing the respective access port in a blocking spanning tree port
8 state.

1 22. (ORIGINAL) The computer readable medium of claim 21 wherein
2 the intermediate network device has a memory, and
3 the configuration of ports as access ports with rapid forwarding is stored at the
4 memory.

1 23. (CURRENTLY AMENEDDED) The computer readable medium of claim 21 wherein
2 the executable program instructions further comprise ~~comprising further program instruc-~~
3 tions for placing one or more other ports in a listening spanning tree port state, upon ini-
4 tialization of the device.

1 24. (PREVIOUSLY PRESENTED) A computer readable medium containing executable
2 program instructions for use by an intermediate network device having a plurality of
3 ports for receiving and forwarding network messages, the executable program instruc-
4 tions comprising program instructions for:

5 configuring one or more ports as access ports;
6 configuring one or more access ports as rapid forwarding ports;
7 identifying all ports that have been configured as access ports with rapid forward-
8 ing; and

9 upon initialization of the device, placing each identified access port with rapid
10 forwarding directly to a forwarding spanning tree port state, without transitioning such
11 identified ports between any intermediary spanning tree port states, so that network mes-

12 sages may be received and forwarded by such identified ports immediately;
13 wherein each access port configured with rapid forwarding is placed in the for-
14 warding state prior to a physical layer link-up signal being received at the respective port.

1 25. (CURRENTLY AMENEDDED) The computer readable medium of claim 20 wherein
2 the executable program instructions further comprise ~~comprising further~~ program instruc-
3 tions for generating and issuing one or more configuration bridge protocol data unit
4 (BPDU) messages from each access port configured as rapid forwarding.

1 26. (ORIGINAL) The computer readable medium of claim 20 wherein an end station is
2 not coupled to a selected one of the access ports configured with rapid forwarding until
3 after the respective access port is placed in the forwarding spanning tree port state.

1 27. (CURRENTLY AMENEDDED) The computer readable medium of claim 26 wherein
2 the executable program instructions ~~comprising further~~ comprise program instructions for
3 generating and issuing one or more configuration bridge protocol data unit (BPDU) mes-
4 sages from each access port configured as rapid forwarding.

1 28. (PREVIOUSLY PRESENTED) A method comprising:
2 configuring one or more ports of a network device as access ports wherein
3 an access port is a port that does not provide connectivity to switches or bridges
4 coupled to other portions of a computer network, but instead connects to a Local
5 Area Network (LAN), a server or an end station;
6 configuring one or more access ports to have a rapid forwarding designation;
7 identifying the ports that have been configured as access ports with rapid forward-
8 ing designation; and

9 upon initialization of the network device, placing each identified access port with
10 rapid forwarding designation directly into a forwarding spanning tree port state, without
11 transitioning such identified ports between any intermediary spanning tree port states, to
12 enable network messages to be received and forwarded by such identified ports immedi-
13 ately.

1 29. (PREVIOUSLY PRESENTED) The method of claim 28 further comprising:

2 monitoring each of the one or more access ports configured with rapid forwarding
3 port designation for receipt of a configuration bridge protocol data unit (BPDU) message;
4 and

5 in response to receiving a BPDU message at one of the access ports configured
6 with rapid forwarding designation, placing the respective access port in a blocking span-
7 ning tree port state.

1 30. (PREVIOUSLY PRESENTED) A method comprising:

2 configuring one or more ports of a network device as access ports;

3 configure one or more access ports to have a rapid forwarding designation by se-
4 lecting with a management protocol, by a network administrator, the one or more access
5 ports to have rapid forwarding designation;

1 identifying the ports that have been configured as access ports with rapid forward-
2 ing designation; and

3 upon initialization of the network device, placing each identified access port with
4 rapid forwarding designation directly into a forwarding spanning tree port state, without
5 transitioning such identified ports between any intermediary spanning tree port states, to
6 enable network messages to be received and forwarded by such identified ports immedi-
7 ately.

1 31. (PREVIOUSLY PRESENTED) The method of claim 28 further comprising:
2 transitioning one or more other access ports that do not have rapid forwarding
3 designation to a listening spanning tree port state, upon initialization of the device.

1 32. (PREVIOUSLY PRESENTED) The method of claim 28, wherein each access port
2 configured with rapid forwarding designation is placed in the forwarding state prior to a
3 link-up signal being received at the respective port.

1 33. (PREVIOUSLY PRESENTED) The method of claim 28 further comprising:
2 issuing one or more configuration bridge protocol data unit (BPDU) messages
3 from each access port configured to have rapid forwarding designation.

1 34. (PREVIOUSLY PRESENTED) An apparatus comprising:
2 a port configuration entity operable to maintain configuration data that in-
3 dicates one or more ports of the apparatus are access ports, wherein an access port
4 is a port that does not provide connectivity to switches or bridges coupled to other
5 portions of a computer network, but instead connects to a Local Area Network
6 (LAN), a server or an end station, the configuration data to also indicate that one
7 or more of the access ports have a rapid forwarding designation;
8 an enhanced spanning tree entity operable to query the port configuration entity
9 and to identify the ports that have been configured as access ports with rapid forwarding
10 designation; and
11 a state machine engine operable to place each identified access port with rapid
12 forwarding designation directly into a forwarding spanning tree port state, without transi-
13 tion of such identified ports between any intermediary spanning tree port states, to enable
14 network messages to be received and forwarded by such identified ports immediately.

1 35. (PREVIOUSLY PRESENTED) The apparatus of claim 34 wherein the enhanced
2 spanning tree entity is further operable to monitor each of the one or more access ports
3 configured with rapid forwarding port designation for receipt of a configuration bridge
4 protocol data unit (BPDU) message, and in response to receiving a BPDU message at one
5 of the access ports configured with rapid forwarding designation, to place the respective
6 access port in a blocking spanning tree port state.

1 36. (PREVIOUSLY PRESENTED) An apparatus comprising:
2 a port configuration entity operable to maintain configuration data that indicates
3 one or more ports of the apparatus are access ports, and that one or more of the access
4 ports have a rapid forwarding designation;
5 a management protocol operable to permit a network administrator to select the
6 one or more access ports to have rapid forwarding designation;
7 an enhanced spanning tree entity operable to query the port configuration entity
8 and to identify the ports that have been configured as access ports with rapid forwarding
9 designation; and
10 a state machine engine operable to place each identified access port with rapid
11 forwarding designation directly into a forwarding spanning tree port state, without transi-
12 tion of such identified ports between any intermediary spanning tree port states, to enable
13 network messages to be received and forwarded by such identified ports immediately.

1 37. (PREVIOUSLY PRESENTED) The apparatus of claim 34 wherein the state machine
2 engine is further operable to transition one or more other access ports that do not have
3 rapid forwarding designation to a listening spanning tree port state, upon initialization of
4 the device.

1 38. (PREVIOUSLY PRESENTED) The apparatus of claim 34 wherein the state machine
2 engine is operable to place each identified access port with rapid forwarding designation
3 into the forwarding spanning tree port state prior to a physical layer link-up signal being
4 received at the respective port.

1 39. (PREVIOUSLY PRESENTED) The apparatus of claim 34 wherein the state machine
2 engine is operable to place each identified access port with rapid forwarding designation
3 into the forwarding spanning tree port state while the respective port is uncoupled from
4 any end station.

1 40. (PREVIOUSLY PRESENTED) An apparatus comprising:

2 means for configuring one or more ports of a network device as access ports,
3 wherein an access port is a port that does not provide connectivity to switches or bridges
4 coupled to other portions of a computer network, but instead connects to a Local Area
5 Network (LAN), a server or an end station;

6 means for configuring one or more access ports to have a rapid forwarding design-
7 nation;

8 means for identifying the ports that have been configured as access ports with
9 rapid forwarding designation; and

10 means for placing each identified access port with rapid forwarding designation
11 directly into a forwarding spanning tree port state upon initialization of the device, with-
12 out transitioning such identified ports between any intermediary spanning tree port states,
13 to enable network messages to be received and forwarded by such identified ports imme-
14 diately.

1 41. (PREVIOUSLY PRESENTED) The method of claim 28, wherein an end station is

2 not coupled to a selected one of the access ports configured with rapid forwarding design-
3 nation until after the respective access port is placed in the forwarding spanning tree port
4 state.

1 42. (PREVIOUSLY PRESENTED) An apparatus comprising:

2 a port configuration entity operable to maintain configuration data that indicates
3 one or more ports have been configured with a management protocol to have a rapid for-
4 warding designation;

5 an enhanced spanning tree entity operable to query the port configuration entity
6 and to identify the ports that have been configured with rapid forwarding designation;
7 and

8 a state machine engine operable to place each identified port with rapid forward-
9 ing designation directly into a forwarding spanning tree port state, without transition of
10 such identified ports between any intermediary spanning tree port states.

1 43. (PREVIOUSLY PRESENTED) The apparatus of claim 42 wherein the state machine
2 engine is operable to place each identified port with rapid forwarding designation into the
3 forwarding spanning tree port state prior to a physical layer link-up signal being received
4 at the port.

1 44. (PREVIOUSLY PRESENTED) The method of claim 30 further comprising:

2 monitoring each of the one or more access ports configured with rapid forwarding
3 port designation for receipt of a configuration bridge protocol data unit (BPDU) message;
4 and

5 in response to receiving a BPDU message at one of the access ports configured
6 with rapid forwarding designation, placing the respective access port in a blocking span-

7 ning tree port state.

1 45. (PREVIOUSLY PRESENTED) The method of claim 30 further comprising:
2 transitioning one or more other access ports that do not have rapid forwarding
3 designation to a listening spanning tree port state, upon initialization of the device.

1 46. (PREVIOUSLY PRESENTED) The method of claim 30, wherein each access port
2 configured with rapid forwarding designation is placed in the forwarding state prior to a
3 physical layer link-up signal being received at the respective port.

1 47. (PREVIOUSLY PRESENTED) The method of claim 30 further comprising:
2 issuing one or more configuration bridge protocol data unit (BPDU) messages
3 from each access port configured to have rapid forwarding designation.

1 48. (PREVIOUSLY PRESENTED) The apparatus of claim 36 wherein the enhanced
2 spanning tree entity is further operable to monitor each of the one or more access ports
3 configured with rapid forwarding port designation for receipt of a configuration bridge
4 protocol data unit (BPDU) message, and in response to receiving a BPDU message at one
5 of the access ports configured with rapid forwarding designation, to place the respective
6 access port in a blocking spanning tree port state.

1 49. (PREVIOUSLY PRESENTED) The apparatus of claim 36 wherein the state machine
2 engine is further operable to transition one or more other access ports that do not have
3 rapid forwarding designation to a listening spanning tree port state, upon initialization of
4 the device.

1 50. (PREVIOUSLY PRESENTED) The apparatus of claim 36 wherein the state machine
2 engine is operable to place each identified access port with rapid forwarding designation
3 into the forwarding spanning tree port state prior to a physical layer link-up signal being
4 received at the respective port.

1 51. (PREVIOUSLY PRESENTED) The apparatus of claim 36 wherein the state machine
2 engine is operable to place each identified access port with rapid forwarding designation
3 into the forwarding spanning tree port state while the respective port is uncoupled from
4 any end station.